Manitowoc

SN12, SN20 Model Nugget Ice Machines

Installation, Use & Care Manual

This manual is updated as new information and models are released.
Visit our website for the latest manual. www.manitowocice.com

America's #1 Selling Ice Machine

Part Number 000005544 12/09

Manitowoc

Safety Notices

As you work on Manitowoc equipment, be sure to pay close attention to the safety notices in this manual. Disregarding the notices may lead to serious injury and/or damage to the equipment.

Throughout this manual, you will see the following types of safety notices:

⚠ Warning

Text in a Warning box alerts you to a potential personal injury situation. Be sure to read the Warning statement before proceeding, and work carefully.

⚠ Caution

Text in a Caution box alerts you to a situation in which you could damage the equipment. Be sure to read the Caution statement before proceeding, and work carefully.

Procedural Notices

As you work on Manitowoc equipment, be sure to read the procedural notices in this manual. These notices supply helpful information which may assist you as you work.

Throughout this manual, you will see the following types of procedural notices:

Important

Text in an Important box provides you with information that may help you perform a procedure more efficiently. Disregarding this information will not cause damage or injury, but it may slow you down as you work.

NOTE: Text set off as a Note provides you with simple, but useful, extra information about the procedure you are performing.

Read These Before Proceeding:

⚠ Caution

Proper installation, care and maintenance are essential for maximum performance and trouble-free operation of your Manitowoc equipment. Read and understand this manual. It contains valuable care and maintenance information. If you encounter problems not covered by this manual, do not proceed, contact Manitowoc Foodservice. We will be happy to provide assistance.

Important

Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

⚠ Warning

PERSONAL INJURY POTENTIAL

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

NOTE: SAVE THESE INSTRUCTIONS.

We reserve the right to make product improvements at any time.
Specifications and design are subject to change without notice.

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Section 1
General Information

Model Numbers

This manual covers the following models:

Lever Activated	Touchless Sensor Activated
SN012A Self Contained Air-Cooled Nugget Ice Machine	SN012AT Self Contained Air-Cooled Nugget Ice Machine
SN020A Self Contained Air-Cooled Nugget Ice Machine	SN020AT Self Contained Air-Cooled Nugget Ice Machine

⚠ Warning

Do not operate equipment that has been misused, abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision concerning use of the appliance by a person responsible for their safety.

Accessories

MANITOWOC CLEANER AND SANITIZER

Manitowoc Ice Machine Cleaner and Sanitizer are available in convenient 16 oz. (473 ml) and 1 gal (3.78 l) bottles. These are the only cleaner and sanitizer approved for use with Manitowoc products.

Cleaner Part Number		Sanitizer Part Number	
16 oz.	000000084	16 oz.	94-0565-3
		1 Gallon	94-0581-3

LEGS

Optional four inch adjustable legs are available.

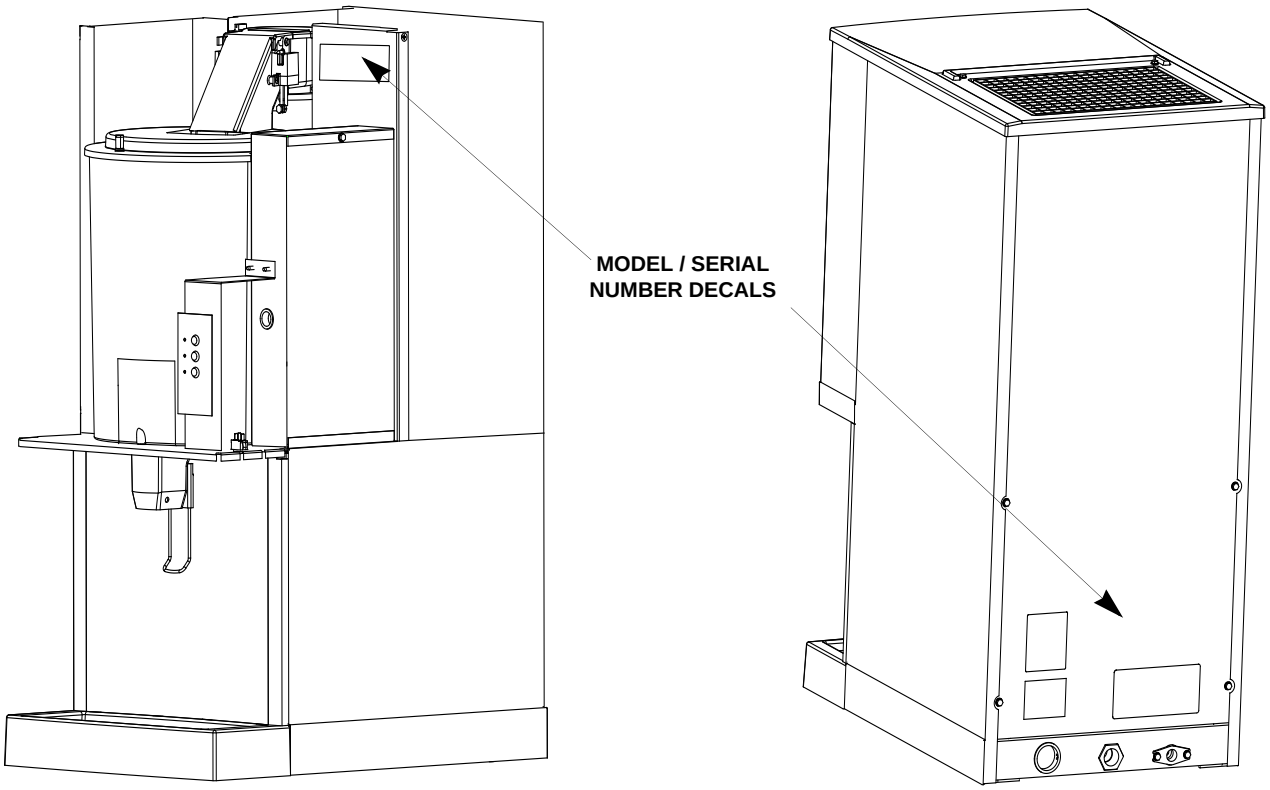
TOUCHLESS SENSING OPTION

Touchless sensing can be ordered installed on the ice machine from the factory or a field conversion kit is available. The field conversion kit includes a replacement front panel and instructions for installation.

Model/Serial Number Location

These numbers are required when requesting information from your local Manitowoc distributor, service representative, or Manitowoc Foodservice. Record the model and serial number of your ice machine in the space provided below.

The model and serial number are listed on the OWNER WARRANTY REGISTRATION CARD. They are also listed on the MODEL/SERIAL NUMBER DECAL affixed to the ice machine head section and condensing unit.



Model/Serial Number Location

Ice Machine	
Model Number	
Serial Number	

Flake/Chiplet/Nugget Commercial Ice Machine Warranty

Manitowoc Ice, Inc. (hereinafter referred to as the "COMPANY") warrants for a period of twentyfour months from the installation date (except as limited below) that new Flake/Chiplet ice machines manufactured by the COMPANY shall be free of defects in material or workmanship under normal and proper use and maintenance as specified by the COMPANY and upon proper installation and start-up in accordance with the instruction manual supplied with the ice machine. The COMPANY'S warranty hereunder with respect to the compressor shall apply for an additional thirty-six months, excluding all labor charges.

The obligation of the COMPANY under this warranty is limited to the repair or replacement of parts, components, or assemblies that in the opinion of the COMPANY are defective. This warranty is further limited to the cost of parts, components or assemblies and standard straight time labor charges at the servicing location.

Time and hourly rate schedules, as published from time to time by the COMPANY, apply to all service procedures. Additional expenses including without limitation, travel time, overtime premium, material cost, accessing or removal of the ice machine, or shipping are the responsibility of the owner, along with all maintenance, adjustments, cleaning, and ice purchases. Labor covered under this warranty must be performed by a COMPANY Contracted Service Representative or a refrigeration service agency as qualified and authorized by the COMPANY'S local Distributor. The COMPANY'S liability under this warranty shall in no event be greater than the actual purchase price paid by customer for the ice machine.

The foregoing warranty shall not apply to (1) any part or assembly that has been altered, modified, or changed; (2) any part or assembly that has been subjected to misuse, abuse, neglect, or accidents; (3) any ice machine that has been installed and/or maintained inconsistent with the technical instructions provided by the COMPANY; or (4) any ice machine initially installed more than five years from the serial number production date. This warranty shall not apply if the Ice Machine's refrigeration system is modified with a condenser, heat reclaim device, or parts and assemblies other than those manufactured by the COMPANY, unless the COMPANY approves these modifications for specific locations in writing.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR GUARANTEES OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. In no event shall the COMPANY be liable for any special, indirect, incidental or consequential damages. Upon the expiration of the warranty period, the COMPANY'S liability under this warranty shall terminate. The foregoing warranty shall constitute the sole liability of the COMPANY and the exclusive remedy of the customer or user. To secure prompt and continuing warranty service, the warranty registration card must be completed and sent to the COMPANY within five (5) days from the installation date.

Complete the following and retain for your record:

Distributor/Dealer_____

Model Number_____ Serial Number_____

Installation Date_____

MANITOWOC ICE

2110 So. 26th St., P.O. Box 1720, Manitowoc, WI 54221-1720

Telephone: 920-682-0161 • Fax: 920-683-7585

Web Site - www.manitowocice.com

Residential Ice Machine Limited Warranty

WHAT DOES THIS LIMITED WARRANTY COVER?
Subject to the exclusions and limitations below, ManitowocFoodservice. ("Manitowoc") warrants to the original consumer that any new ice machine manufactured by Manitowoc (the "Product") shall be free of defects in material or workmanship for the warranty period outlined below under normal use and maintenance, and upon proper installation and start-up in accordance with the instruction manual supplied with the Product.

HOW LONG DOES THIS LIMITED WARRANTY LAST?

Product Covered	Warranty Period
Ice Machine	Twelve (12) months from the sale date

WHO IS COVERED BY THIS LIMITED WARRANTY?
This limited warranty only applies to the original consumer of the Product and is not transferable.

WHAT ARE MANITOWOC ICE'S OBLIGATIONS UNDER THIS LIMITED WARRANTY?
If a defect arises and Manitowoc receives a valid warranty claim prior to the expiration of the warranty period, Manitowoc shall, at its option: (1) repair the Product at Manitowoc's cost, including standard straight time labor charges, (2) replace the Product with one that is new or at least as functionally equivalent as the original, or (3) refund the purchase price for the Product. Replacement parts are warranted for 90 days or the balance of the original warranty period, whichever is longer. The foregoing constitutes Manitowoc's sole obligation and the consumer's exclusive remedy for any breach of this limited warranty. Manitowoc's liability under this limited warranty is limited to the purchase price of Product. Additional expenses including, without limitation, service travel time, overtime or premium labor charges, accessing or removing the Product, or shipping are the responsibility of the consumer.

HOW TO OBTAIN WARRANTY SERVICE
To obtain warranty service or information regarding your Product, please contact us at:
MANITOWOC FOODSERVICE.
2110 So. 26th St.
P.O. Box 1720,
Manitowoc, WI 54221-1720
Telephone: 920-682-0161 Fax: 920-683-7585
www.manitowocice.com

WHAT IS NOT COVERED?
This limited warranty does not cover, and you are solely responsible for the costs of: (1) periodic or routine maintenance, (2) repair or replacement of the Product or parts due to normal wear and tear, (3) defects or damage to the Product or parts resulting from misuse, abuse, neglect, or accidents, (4) defects or damage to the Product or parts resulting from improper or unauthorized alterations, modifications, or changes; and (5) defects or damage to any Product that has not been installed and/or maintained in accordance with the instruction manual or technical instructions provided by Manitowoc. To the extent that warranty exclusions are not permitted under some state laws, these exclusions may not apply to you.

EXCEPT AS STATED IN THE FOLLOWING SENTENCE, THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OF MANITOWOC WITH REGARD TO THE PRODUCT. ALL IMPLIED WARRANTIES ARE STRICTLY LIMITED TO THE DURATION OF THE LIMITED WARRANTY APPLICABLE TO THE PRODUCTS AS STATED ABOVE, INCLUDING BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.
Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

IN NO EVENT SHALL MANITOWOC OR ANY OF ITS AFFILIATES BE LIABLE TO THE CONSUMER OR ANY OTHER PERSON FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOSS PROFITS, REVENUE OR BUSINESS) ARISING FROM OR IN ANY MANNER CONNECTED WITH THE PRODUCT, ANY BREACH OF THIS LIMITED WARRANTY, OR ANY OTHER CAUSE WHATSOEVER, WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY OF LIABILITY.
Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

HOW STATE LAW APPLIES
This limited warranty gives you specific legal rights, and you may also have rights that vary from state to state or from one jurisdiction to another.

REGISTRATION CARD
To secure prompt and continuing warranty service, this warranty registration card must be completed and sent to Manitowoc within thirty (30) days from the sale date. Complete the registration card and send it to Manitowoc.

Section 2
Installation Instructions

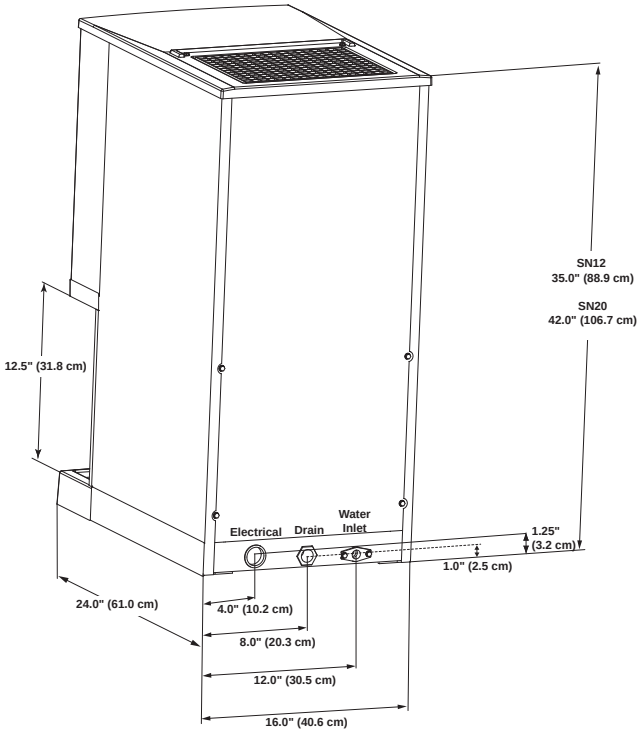
Ice Machine Dimensions

These instructions are provided to assist the qualified installer. Check your local Yellow Pages for the name of the nearest Manitowoc distributor, or call Manitowoc Foodservice for information regarding start-up services.

Important

Failure to follow these installation guidelines may affect warranty coverage.

SN12 & SN20 AIR COOLED ICE MACHINES



Location of Ice Machine

The location selected for the ice machine must meet the following criteria. If any of these criteria are not met, select another location.

- The location must be free of airborne and other contaminants.
- The air temperature must be at least 45°F (7°C), but must not exceed 110°F (43.4°C).
- The water temperature must be at least 45°F (7°C), but must not exceed 90°F (32.2°C).
- The location must not be near heat-generating equipment or in direct sunlight.
- The location must be capable of supporting the weight of the ice machine and a full bin of ice and allow the ice machine to be level front to back and side to side.
- The location must allow enough clearance for water and electrical connections in the **rear of the ice machine.** The drain can be routed out the rear or bottom of dispenser.
- The location must not obstruct airflow through or around the ice machine. Airflow is in the left side and out the top. Refer to chart for clearance requirements.

Ice Machine Clearance Requirements

	SN12	SN20
Top	24”	24”
Sides	8”	8”
Back	*5”	*5”

*5” is recommended for servicing the ice machine. Clearance can be 0” when water and drain connections exit the bottom of the ice machine.

⚠ Caution

The ice machine head section must be protected if it will be subjected to temperatures below 32°F (0°C). Failure caused by exposure to freezing temperatures is not covered by the warranty. See “Removal from Service/Winterization”.

Electrical Service

⚠ Warning

All wiring must conform to local, state and national codes.

VOLTAGE

The maximum allowable voltage variation is ±10% of the rated voltage on the ice machine model/serial number plate at start-up (when the electrical load is highest).

FUSE/CIRCUIT BREAKER

A separate fuse/circuit breaker must be provided for each ice machine. Circuit breakers must be H.A.C.R. rated (does not apply in Canada).

115/60/1 ice machines are factory pre-wired with a power cord and 5-15P plug.

230/50/1 ice machines are factory pre-wired with a power cord, no plug is supplied.

⚠ Warning

The ice machine must be grounded in accordance with national and local electrical codes.

TOTAL CIRCUIT AMPACITY

The total circuit ampacity is used to help select the wire size of the electrical supply.

The wire size (or gauge) is also dependent upon location, materials used, length of run, etc., so it must be determined by a qualified electrician.

Electrical Requirements

Ice Machine	Voltage Phase Cycle	Air-Cooled	
		Maximum Fuse/Circuit Breaker	Total Circuit Amps
SN12	115/1/60	15	10.3
	230/1/50	15	4.6
SN20	115/1/60	15	10.3
	230/1/50	15	6.0

Water Supply and Drains

POTABLE WATER SUPPLY

Local water conditions may require treatment of the water to inhibit scale formation, filter sediment, and remove chlorine odor and taste.

Important

If you are installing a Manitowoc water filter system, refer to the Installation Instructions supplied with the filter system for ice making water inlet connections.

POTABLE WATER INLET LINES

Follow these guidelines to install water inlet lines:

- Do not connect the ice machine to a hot water supply. Be sure all hot water restrictors installed for other equipment are working. (Check valves on sink faucets, dishwashers, etc.)
- If water pressure exceeds the maximum (80 psig 551.5 kPA) recommended pressure, obtain a water pressure regulator from your Manitowoc distributor.
- Install a water shut-off valve and union for the ice making water lines.
- Insulate water inlet lines to prevent condensation.

DRAIN CONNECTIONS

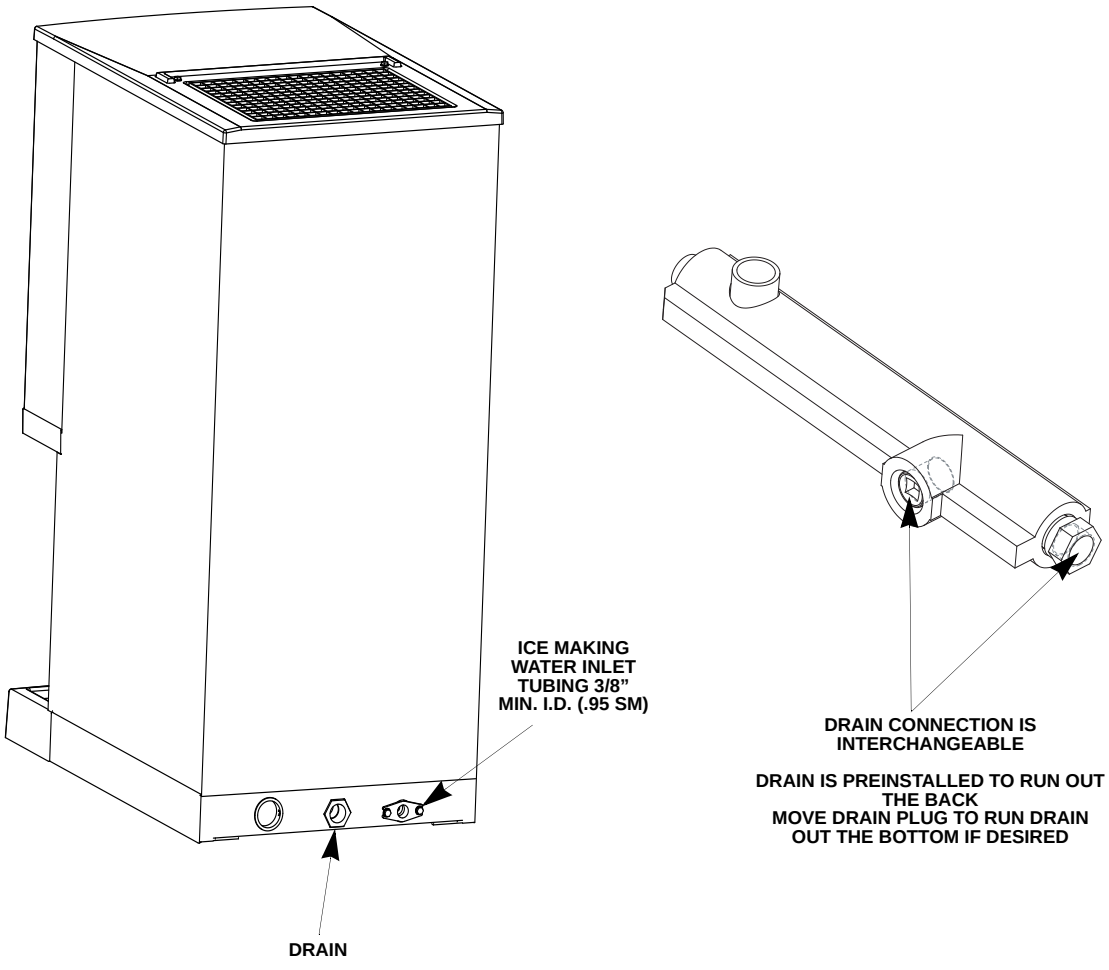
Follow these guidelines when installing drain lines:

- Drain lines must have a 1.5 inch drop per 5 feet of run (2.5 cm per meter), and must not create traps.
- The floor drain must be large enough to accommodate drainage from all drains.
- Insulate drain lines to prevent condensation.
- Drains must have a union or other suitable means to allow in place disconnection from the ice machine when servicing is required.

WATER SUPPLY AND DRAIN LINE SIZING/CONNECTIONS

> **⚠ Caution**
> Plumbing must conform to state and local codes.

Location	Water Temperature	Water Pressure	Ice Machine Fitting	Tubing Size Up to Ice Machine Fitting
Ice Making Water Inlet	45°F (6°C) Min. 90°F (32.2°C) Max.	20 psi (137.9 kPA) Min. 80 psi (551.5 kPA) Max.	3/8" Female Pipe Thread	3/8" (10 mm) minimum inside diameter
Ice Machine Drain	---	---	3/4" Female Pipe Thread	3/4" (19 mm) minimum inside diameter


ICE MAKING WATER INLET TUBING 3/8" MIN. I.D. (.95 SM)
DRAIN
DRAIN CONNECTION IS INTERCHANGEABLE
DRAIN IS PREINSTALLED TO RUN OUT THE BACK
MOVE DRAIN PLUG TO RUN DRAIN OUT THE BOTTOM IF DESIRED

Typical Water Supply Drain Installation

Before Starting the Ice Machine

Installation Checklist

X	Checklist Item
	Is the Ice Machine level?
	Has all of the internal packing been removed?
	Have all of the electrical and water connections been made?
	Has the supply voltage been tested and checked against the rating on the nameplate?
	Is there proper clearance around the ice machine for air circulation?
	Has the ice machine been installed where ambient temperatures will remain in the range of 45° - 110°F (7° - 43.3°C)?
	Has the ice machine been installed where the incoming water temperature will remain in the range of 45° - 90°F (7° - 32.2°C)?
	Are all electrical leads free from contact with refrigeration lines and moving equipment?
	Has the owner/operator been instructed regarding maintenance and the use of Manitowoc Cleaner and Sanitizer?
	Has the warranty registration card been sent to the factory?
	Has the ice machine and dispenser been sanitized?
	Has this manual been given to the owner/operator?
	Is the water reservoir approximately 2/3 full of water?
	Has the toggle switch been placed in the ice position? (Switch is located behind front cover)

All Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, new installations do not require any adjustment. To ensure proper operation, follow the Operational Checks in Section 3 of this manual.

Adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

⚠ Warning

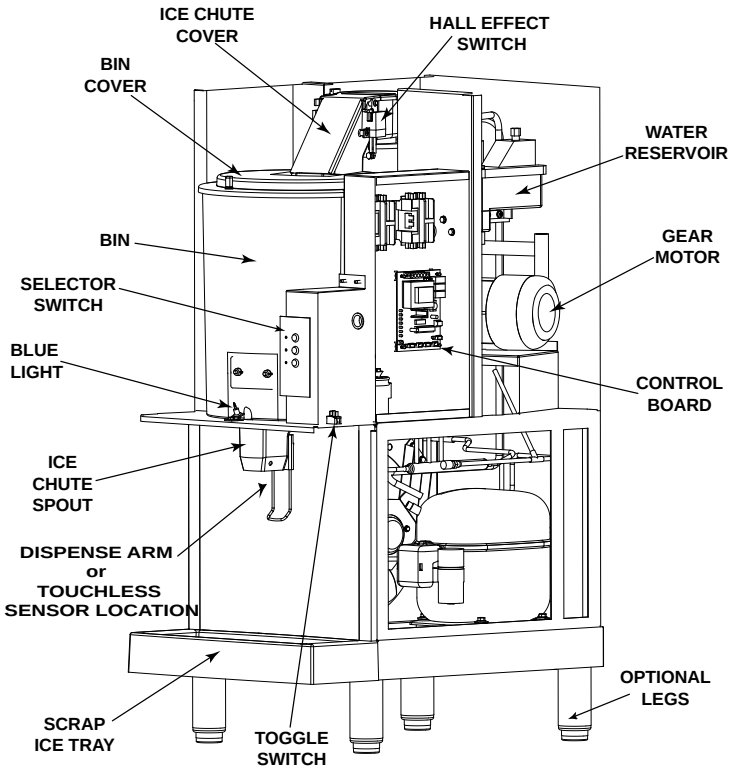
Potential Personal Injury Situation

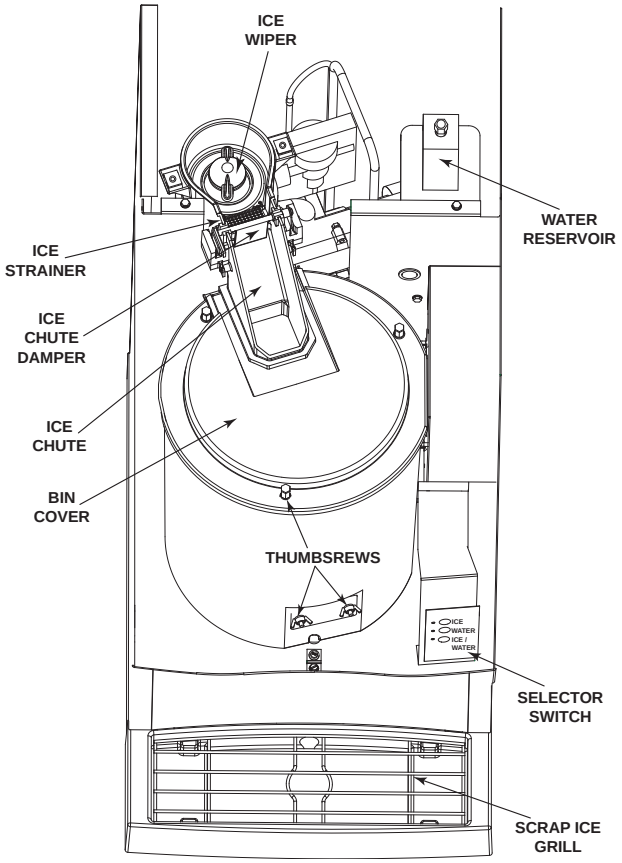
Do not operate equipment that has been misused. abused, neglected, damaged, or altered/modified from that of original manufactured specifications.

Section 3
Ice Machine Operation

Component Identification

ICE MACHINE HEAD SECTION





Operational Checks

GENERAL

Manitowoc ice machines are factory-operated and adjusted before shipment. Normally, a newly installed ice machine does not require any adjustment.

To ensure proper operation, always follow the Operational Checks:

- when starting the ice machine for the first time
- after a prolonged out of service period
- after cleaning and sanitizing

NOTE: Routine adjustments and maintenance procedures outlined in this manual are not covered by the warranty.

Blue Light

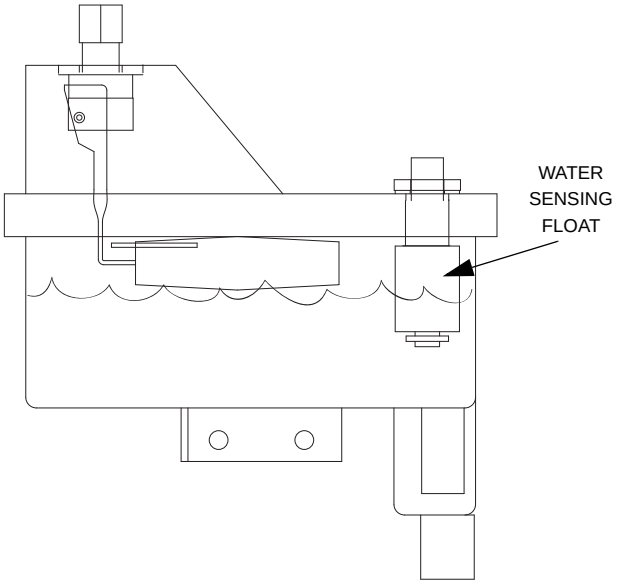
The blue light on the dispensing spout is energized when the toggle switch is in the ICE position and the ice machine is operational. If the light is not energized the ice machine will not make ice. Refer to section 5 Before Calling For Service if the ice machine has power and the light will not energize.

Toggle Switch

The toggle switch must be placed in the ON position to make ice.

Water Reservoir

The water reservoir must be 2/3 full of water and the water sensing float must be up (switch closed) before the ice machine will start.



Ice Production

Allow the ice machine to produce ice for 15 minutes before testing the dispense mechanism. This will insure a sufficient quantity of ice in the bin for dispensing.

OPERATION

1. Set Selector Switch

Depress the button adjacent to the text.

- Select ICE for ice dispense only
- Select ICE/WATER for water and ice
- Select WATER for water only

2. Dispense

Lever Activated

Use glass or container to press dispenser arm backward. Release the arm and the ice machine will stop dispensing.

Touchless Center Activated

Place a glass or container underneath the dispensing spout within a 1” of the sensor. The ice machine will automatically dispense. Remove the glass or container to stop dispensing.

Sequence of Operation

15 MINUTE TIME DELAY

The 15 minute delay must be expired before the gearmotor or compressor will energize.

The delay period starts to time out upon application of power or movement of the toggle switch from OFF to ICE.

The delay period starts when:

- Tthe ice machine enters Automatic Shutoff
- Power is disconnected and reconnected
- The toggle switch is moved from OFF to ICE

This time delay period can not be overridden and will reset to 15 minutes if any of the above conditions occur.

PRIOR TO STARTUP

When the toggle switch is placed in the ICE position the following must occur in the listed order before ice making will start.

- The ice chute damper must be in the closed or down position.
- The 15 minute delay period must be expired. The delay period starts upon application of power or toggle switch movement from OFF to ICE.
- The water sensing switch must be closed (water reservoir full of water and water sensing float in the up position).

INITIAL STARTUP

Applying power and/or moving the toggle switch from OFF to ICE will start a 15 minute delay period. This delay period can not be overridden. With the water sensing switch closed (reservoir full of water) the gear motor will energize at the end of the 15 minute time delay. The compressor and condenser fan motor energize 5 seconds after the gearmotor.

FREEZE CYCLE

The float valve automatically maintains the water level in the reservoir. The ice damper will open and close to verify ice production. The ice machine will continue to make ice until the ice damper is held open (up) as ice fills the bin.

AUTOMATIC SHUTOFF

When the ice damper is held open by ice, the gearmotor, compressor and condenser fan de-energize. The fifteen minute delay period starts to time out. The ice machine will remain off until the 15 minute delay period expires and the ice damper closes.

RESTART AFTER AUTOMATIC SHUT-OFF

1. Less than 4 hours have passed since automatic shut-off.

With the water sensing switch closed (reservoir full of water) the gear motor will energize at the end of the 15 minute time delay. The compressor and condenser fan motor energize 5 seconds after the gearmotor.

2. More than 4 hours have passed since automatic shut-off.

The dump valve energizes to drain the evaporator. After 30 seconds the dump valve de-energizes. When the reservoir fills with water, the water sensing switch closes and the gearmotor energizes. The compressor and condenser fan motor energize 5 seconds after the gearmotor.

SafeGuards

The ice machine control board has safety features to protect the ice machine from severe failures. The ice machine will stop when conditions arise that would cause major component failure. Refer to section 5 for details

Removal from Service/Winterization

GENERAL

Special precautions must be taken if the ice machine head section is to be removed from service for an extended period of time or exposed to ambient temperatures of 32°F (0°C) or below.

⚠ Caution

If water is allowed to remain in the ice machine in freezing temperatures, severe damage to some components could result. Damage of this nature is not covered by the warranty.

Follow the procedure below.

1. Disconnect the electrical power at the circuit breaker or the electric service switch.
2. Turn off the water supply.
3. Disconnect and drain the incoming ice-making water line at the rear of the ice machine.
4. Disconnect drain tubing (from the inlet to dump valve) and drain water into container and discard.
5. Make sure water is not trapped in any of the water lines, drain lines, distribution tubes, etc.

Section 4
Maintenance

Cleaning and Sanitizing

GENERAL

You are responsible for maintaining the ice machine in accordance with the instructions in this manual. Maintenance procedures are not covered by the warranty.

Clean and sanitize the ice machine every six months for efficient operation. If the ice machine requires more frequent cleaning and sanitizing, consult a qualified service company to test the water quality and recommend appropriate water treatment. If required, an extremely dirty ice machine may be taken apart for cleaning and sanitizing.

Manitowoc Ice Machine Cleaner and Sanitizer are the only products approved for use in Manitowoc ice machines.

⚠ Caution

Use only Manitowoc approved Ice Machine Cleaner (part number 000000084) and Sanitizer (part number 94-0565-3). It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling. Read and understand all labels printed on bottles before use.

⚠ Caution

Do not mix Cleaner and Sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling.

⚠ Warning

Wear rubber gloves and safety goggles (and/or face shield) when handling ice machine Cleaner or Sanitizer.

EXTERIOR CLEANING

Weekly

Remove grill from scrap ice tray and wipe splash panel, scrap ice tray and grill with sanitizer & water solution (refer to page 4-7). Pour excess solution in scrap ice tray to clear drain.

TOUCHLESS SENSOR ONLY

Wipe sensor window with a soft cloth and mild detergent. Rinse with clear water and dry with a clean soft cloth.

Dust and dirt can be removed from exterior surfaces with mild household dish-washing detergent and warm water. Wipe dry with a clean, soft cloth.

Manitowoc's Cleaning Technology

Manitowoc Flake/Nugget Ice Machines include technology that allows the initiation and completion of a cleaning cycle at the flip of a switch. This cycle will permit cleaning of all surfaces that come in contact with the water distribution system. Periodic maintenance must be performed that includes sanitizing the bin and adjacent surface areas, which are not contacted by the water distribution system.

Depending on local water conditions Manitowoc recommends initiating preventative maintenance cleaning procedures between the 6 month cleanings. This preventive maintenance removes mineral build-up from the evaporator, which results in peak efficiency and lower operating costs.

This technology allows initiation and completion of a clean cycle, after which the ice machine automatically starts ice making again.

This Manitowoc Ice Machine has three separate cleaning procedures.

Preventative Maintenance Cleaning Procedure

Perform this procedure as required for your water conditions. Recommended monthly.

- Allows cleaning the ice machine without removing all of the ice from the bin
- Removes mineral deposits from areas or surfaces that are in direct contact with water during the freeze cycle (reservoir, evaporator, auger, drain lines).

Cleaning/Sanitizing Procedure

This procedure must be performed a minimum of once every six months.

- All ice must be removed from the bin
- The ice machine and bin must be disassembled cleaned and sanitized
- The ice machine produces ice with the cleaner and sanitizer solutions
- All ice produced during the cleaning and sanitizing procedures must be discarded

Heavily Scaled Cleaning Procedure

Perform this procedure if you have some or all of these symptoms.

- Grinding, popping or squealing noises from the evaporator
- Grinding noise from gearbox
- Ice machine stops on Safety Shutdown
- Your water has a high concentration of minerals
- The ice machine has not been on a regular maintenance schedule.

Run a cleaning procedure as described above after this procedure is complete.

NOTE: A Sanitizing Procedure must be performed after all cleaning procedures have been completed.

PREVENTATIVE MAINTENANCE CLEANING PROCEDURE

Ice machine cleaner is used to remove lime scale or other mineral deposits. It is not used to remove algae or slime. Refer to “Sanitizing Procedure” for removal of algae and slime. To initiate a cleaning cycle using Manitowoc’s Cleaning Technology use the following procedure.

Step 1 To start a cleaning cycle, move the toggle switch to the CLEAN position. Water will flow through the water dump valve and down the drain.

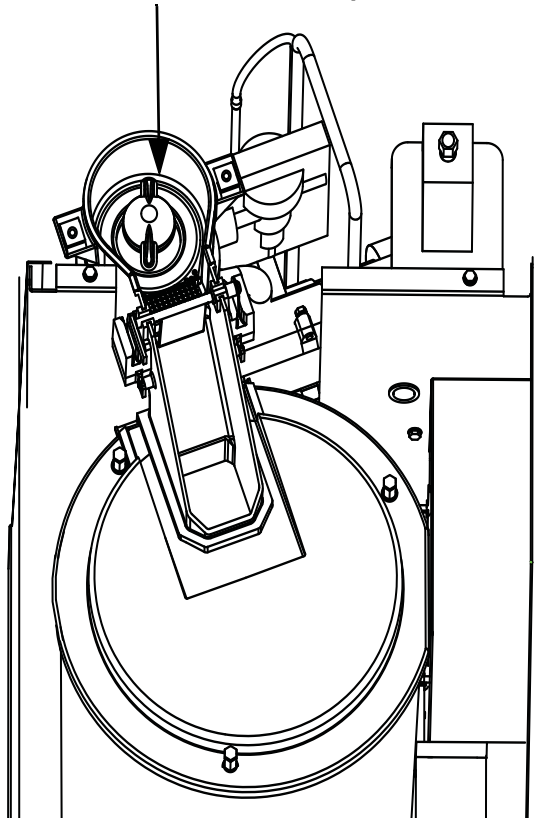
Step 2 Remove the top panel and translucent plastic ice chute cover. Wait about one minute then add the proper amount of Manitowoc Ice Machine Cleaner. Rinse the cleaner from the top of the evaporator with 2 ounces (60 ml) of clear water and re-install cover..

Model	Amount of Cleaner
SN12 SN20	2 ounce (60 ml)

⚠ Caution

Use only Manitowoc approved Ice Machine Cleaner. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling. Read and understand all labels printed on bottles before use.

Add Cleaner To Evaporator Here



Step 3 The ice machine will run a wash cycle, a series of rinse cycles and then stop. This entire cycle lasts approximately 30 minutes.

NOTE: Periodic cleaning must be performed on adjacent surface areas not contacted by the water distribution system.

NOTE: The ice machine may be set to start and finish a cleaning procedure, and then automatically start ice making again.

A. After cleaner is added move the switch from CLEAN to ICE position.

B. When the cleaning cycle is complete ice making will start automatically.

Changing toggle switch position during clean cycle:

1. Less than 60 seconds into Clean cycle - The Clean cycle will end when the toggle switch is moved to the OFF position.
2. More than 60 seconds into Clean cycle - The ice machine will complete the clean cycle. Toggle switch position will determine the next cycle after the Clean cycle is completed.

- CLEAN POSITION - The ice machine will wait for a change in toggle switch position.
- OFF POSITION - The ice machine will wait for a change in toggle switch position.
- ICE POSITION - The ice machine will start making ice automatically.

Manitowoc recommends disassembling, cleaning and sanitizing the ice machine and dispenser every six months.

PROCEDURE TO CLEAN HEAVILY SCALED FLAKE/NUGGET ICE MACHINES

Ice machines that are heavily scaled or have not been cleaned on a regular basis will need to run this procedure. Failure to do so may result in binding of the auger as the lime scale releases from the auger and evaporator barrel.

Step 1 Remove panels and set the ICE/OFF/CLEAN toggle switch to the OFF position.

Step 2 Remove all ice from the bin.

Step 3 Turn off the water supply to the ice machine.

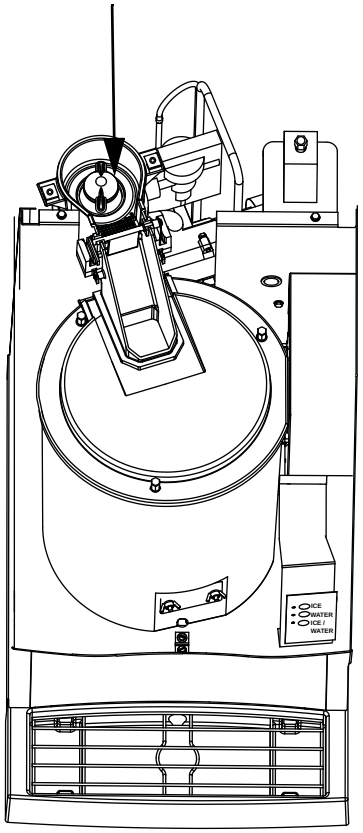
Step 4 Place ICE/OFF/CLEAN toggle switch in the CLEAN position. The dump valve will open and drain the water from the evaporator and reservoir.

Step 5 Wait approximately 30 seconds (or until the evaporator is drained) and place the toggle switch in the OFF position.

Step 6 Refer to chart and add the correct amount of cleaner for your model ice machine.

Model	Amount of Cleaner
SN12 SN20	12 ounce (355 ml)

Add Cleaner To Evaporator Here



Step 7 Turn on the water supply to the ice machine.

Important

Leave the cleaner/water solution in the evaporator for a minimum of 4 hours.

Step 8 Move the toggle switch to the ICE position. The compressor will energize and produce ice with the cleaning solution. Continue the freeze cycle for 15 minutes.

Step 9 Move the toggle switch to the OFF position, then follow the standard cleaning and sanitizing procedures on pages 4-5 & 4-6.

CLEANING PROCEDURE

Ice machines that are heavily scaled or have not been cleaned on a regular basis will need to run the Heavily Scaled Cleaning Procedure before this one. Failure to do so may result in binding of the auger as the lime scale releases from the auger and evaporator barrel.

Ice machine cleaner is used to remove lime scale or other mineral deposits. It is not used to remove algae or slime. Refer to the “Sanitizing Procedure” for removal of algae and slime.

Step 1 Remove panels and set the ICE/OFF/CLEAN toggle switch to the OFF position

Step 2 Turn off the water supply to the ice machine.

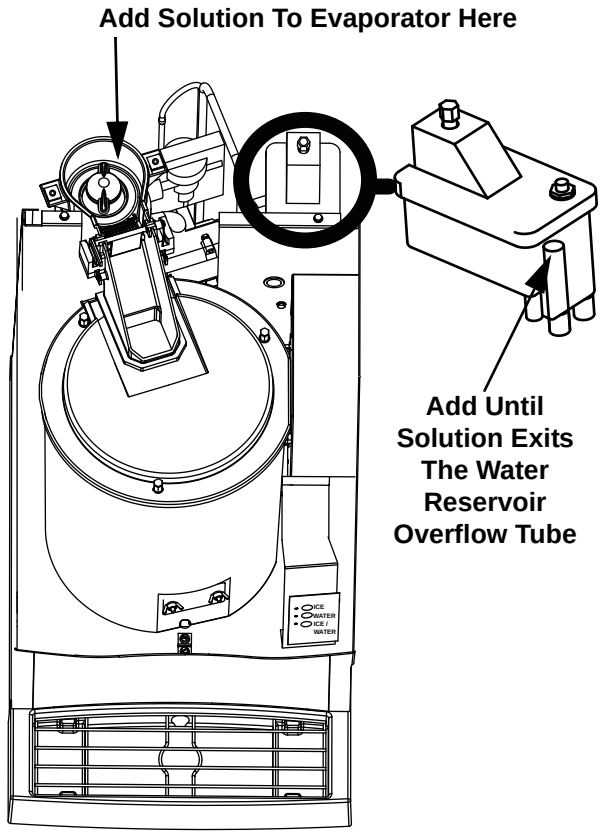
Step 3 Remove all ice from the bin.

Step 4 Place ICE/OFF/CLEAN toggle switch in the CLEAN position. The dump valve will open and drain the water from the evaporator and reservoir.

Step 5 Wait approximately 30 seconds (or until the evaporator is drained) and place the toggle switch in the OFF position.

Step 6 Refer to chart and premix the correct solution of cleaner and cool water for your ice machine

Model	Amount of Cleaner Part Number 000000084	Amount of Water
SN12 SN20	2 ounces (60 ml)	32 ounces (1 liter)



Step 7 Remove the top cover from the ice chute and pour the cleaner/water solution into the evaporator. Add the entire amount of premixed solution (excess solution will exit through the overflow tube in the water reservoir).

Step 8 Replace the ice chute cover and allow the ice machine to stand for 30 minutes.

Step 9 Turn on the water supply to the ice machine.

Step 10 Move the toggle switch to the ICE position. After the 15 minute delay period expires the compressor will energize and produce ice with the cleaning solution.

Step 11 The ice machine will freeze and discharge the cleaning solution into the bin. Allow the cycle to run for 15 minutes.

Step 12 Place the toggle switch in the OFF position and refer to sanitizing procedure.

NOTE: Discard all ice produced during the cleaning process. Cleaning and sanitizing must be performed on adjacent surface areas not contacted by the water distribution system. Refer to Removal of Parts for Cleaning/Sanitizing (Page 4-7)- Disassemble, clean and sanitize the ice machine a minimum of once every six months.

SANITIZING PROCEDURE

Ice machine sanitizer is used to remove algae or slime. It is not used to remove lime scale or other mineral deposits. Refer to the “Cleaning Procedure” for removal of lime scale or other mineral deposits.

NOTE: Sanitizing must be performed on adjacent surface areas not contacted by the water distribution system. Always perform Disassembly for Cleaning and Sanitizing Procedure and a Cleaning Procedure before sanitizing the ice machine.

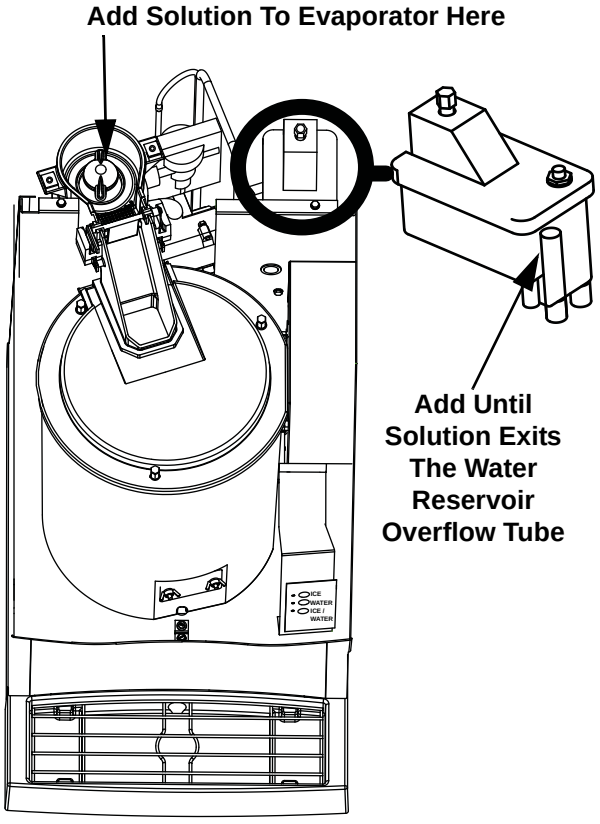
Step 1 Turn off the water supply to the ice machine.

Step 2 Place ICE/OFF/CLEAN toggle switch in the CLEAN position. The dump valve will open and drain the water from the evaporator and reservoir.

Step 3 Wait approximately 30 seconds (or until the evaporator is drained) and place the toggle switch in the OFF position.

Step 4 Refer to the chart and add the correct amount of sanitizer and cool water for your model ice machine.

Model	Amount of Sanitizer	Amount of Water
SN12 SN20	2 ounces (60 ml)	3 gallons (11 liters)



Step 5 Remove the top cover from the ice chute and pour the sanitizer/water solution into the evaporator. Add the entire amount of premixed solution (excess solution will exit through the overflow tube in the water reservoir)

Step 6 Replace the ice chute cover and allow the ice machine to stand for 30 minutes.

Step 7 Turn on the water supply to the ice machine.

Step 8 Move the toggle switch to the ICE position. After the 15 minute delay period expires the compressor will energize and produce ice with the sanitizing solution.

Step 9 The ice machine will freeze and discharge the sanitizing solution into the bin. Allow the cycle to run for 15 minutes.

NOTE: Discard all ice produced during the sanitizing process.

Step 10 Place the toggle switch in the CLEAN position. The ice machine will run a wash cycle, a series of rinse cycles and then stop. This entire cycle lasts approximately 30 minutes.

Step 11 Refer to Disassembly For Cleaning/Sanitizing, (Pag 4-7) remove clean and sanitize all parts listed.

Component Disassembly For Cleaning/Sanitizing

The ice machine must be disassembled cleaned and sanitized every six months.

> **⚠ Caution**
> Do not mix Cleaner and Sanitizer solutions together. It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling.

1. Turn off water supply to ice machine.

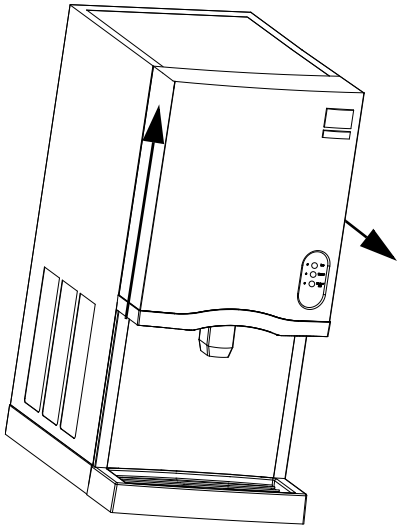
> **⚠ Warning**
> Wear rubber gloves and safety goggles (and/or face shield) when handling Ice Machine Cleaner or Sanitizer.

2. Place toggle switch in the clean position for 30 seconds to drain water from reservoir, then move toggle switch to Off position.
3. Run dispenser to transfer all ice from the bin to a container.

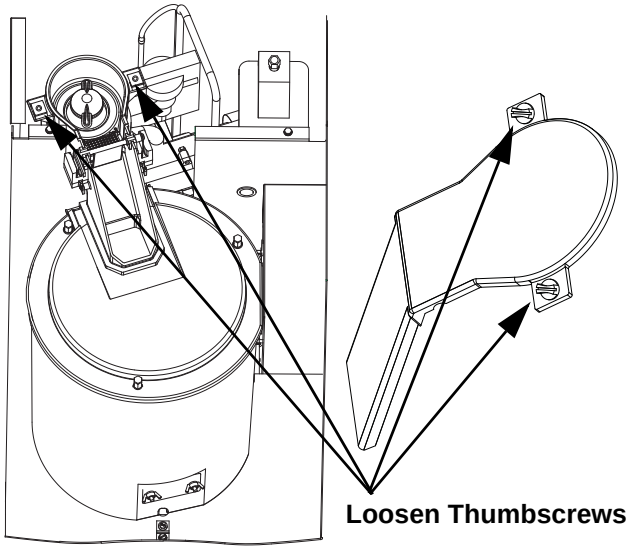
> **⚠ Warning**
> Disconnect electric power to the ice machine at the electric switch box before proceeding.

4. Disconnect electrical power to the ice machine.
5. Remove top cover.
   A. Remove two thumbscrews.
   B. Lift up on top cover to remove.

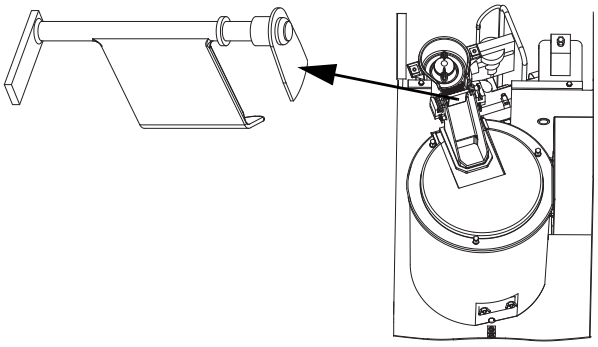
6. Remove front cover.
   A. Lift up on front cover.
   B. Pull forward to disengage keyhole slots.



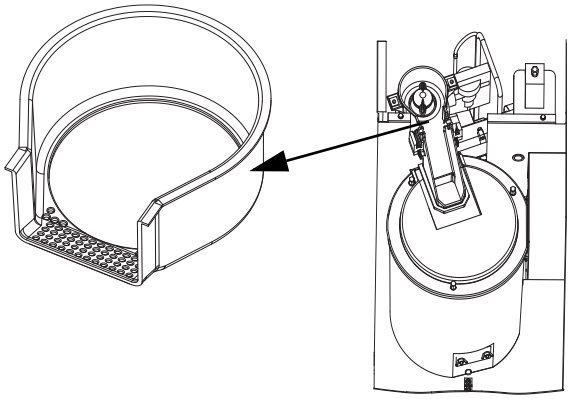
7. Remove ice chute cover
   A. Turn the two thumbscrews 1/4 turn
   B. Lift to remove cover.



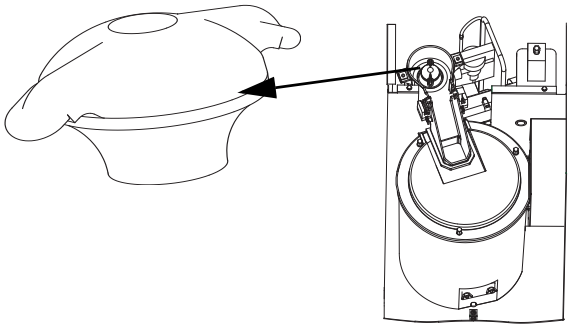
8. Lift out ice damper.



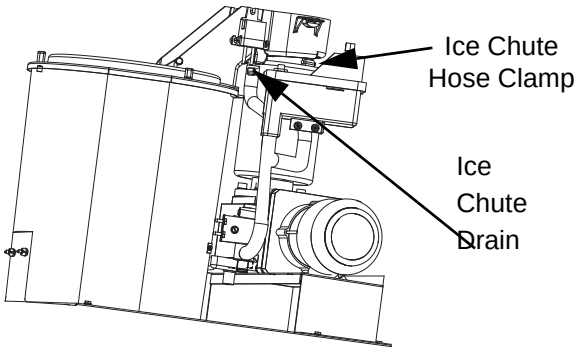
9. Lift out ice strainer ramp.



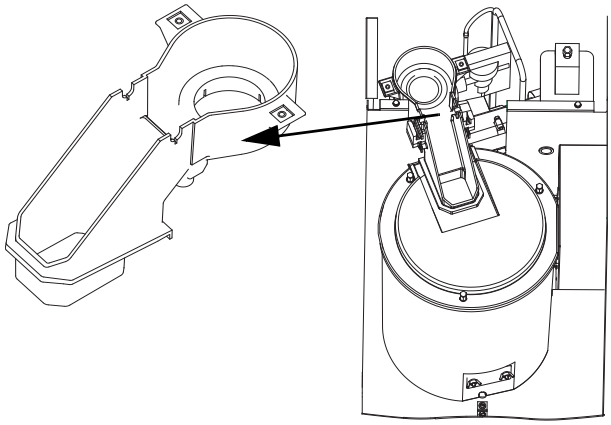
10. Turn ice wiper counterclockwise to remove.



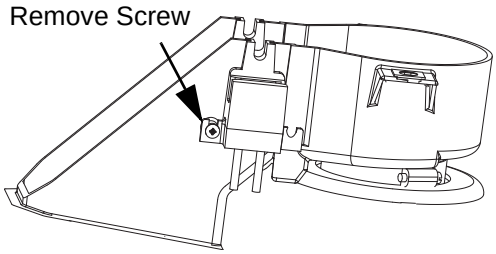
11. Loosen ice chute hose clamp.
12. Disconnect ice chute drain.



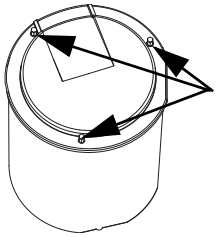
13. Lift up on ice chute to remove. The ice chute must be removed before the bin cover can be removed.



14. The ice chute can be cleaned in place. If complete removal is desired use a phillips screwdriver to remove the Hall Effect Switch assembly from the ice chute.



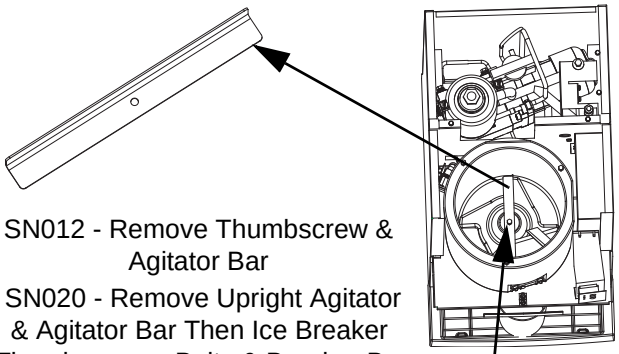
15. Remove three thumbscrews, then remove bin cover.



Remove Thumbscrews

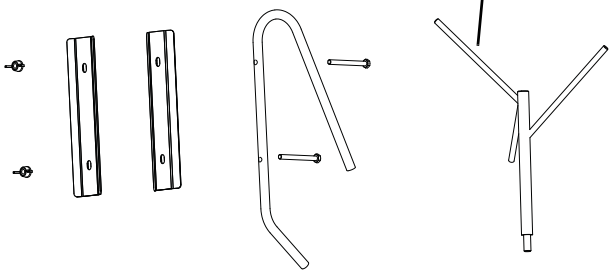
16. Remove agitator bar and ice breaker on SN020.

NOTE: Bar must be reassembled by inserting front edge into the paddle wheel, then lowering the back edge (rounded 90 angle) to prevent water leakage into the compressor compartment.



SN012 - Remove Thumbscrew & Agitator Bar

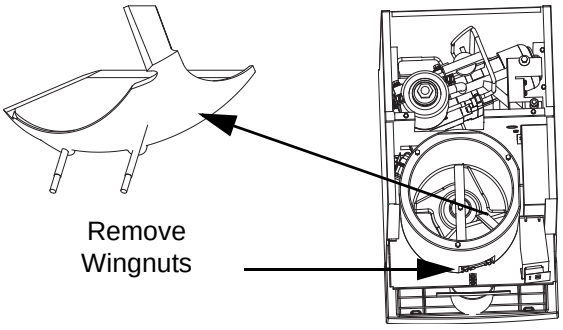
SN020 - Remove Upright Agitator & Agitator Bar Then Ice Breaker Thumbscrews, Bolts & Breaker Bar



17. Remove ice deflector.

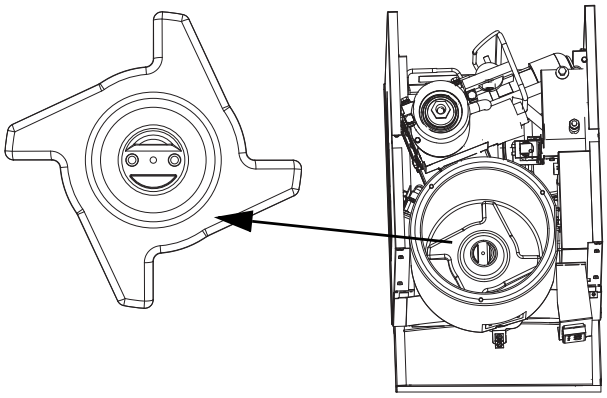
A. Remove the two thumbscrews.

B. Lift the ice deflector out.



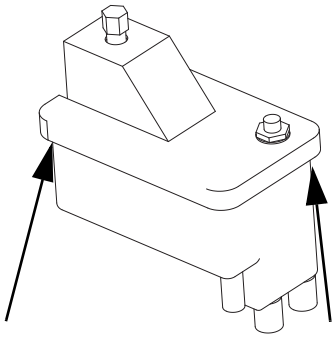
Remove Wingnuts

18. Remove ice dispensing wheel by lifting straight out.



Water Reservoir Cover Removal

Push up on cover to snap off.



19. Mix a solution of cleaner and warm water. Depending upon the amount of mineral buildup, a larger quantity of solution may be required. Use the ratio in the table below to mix enough solution to thoroughly clean all parts.

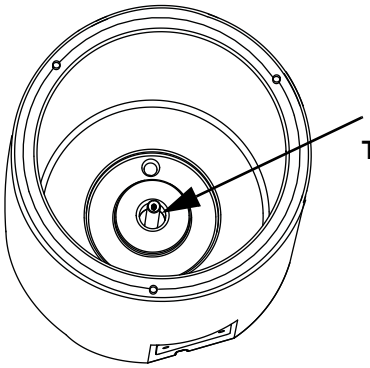
Solution Type	Water	Mixed With
Cleaner	1 gal. (4 l)	16 oz (500 ml) cleaner

20. Use the cleaner/water mixture to clean all components. The cleaner solution will foam when it contacts lime scale and mineral deposits; once the foaming stops use a soft-bristle nylon brush, sponge or cloth (NOT a wire brush) to carefully clean the parts. Soak parts for 5 minutes (15 - 20 minutes for heavily scaled parts). Rinse all components with clean water.

⚠ Caution

Do not pour cleaner or sanitizer solutions into the bin. The solution will leak out of the front of the bin and into the compressor compartment.

21. While components are soaking clean all foodzone surfaces of the bin. Rinse all areas thoroughly with clean water.



22. .Mix a solution of sanitizer and warm water.

Solution Type	Water	Mixed With
Sanitizer	6 gal. (23 l)	4 oz (120 ml) sanitizer

23. Use 1/2 of the sanitizer/water solution to sanitize all removed components. Use a cloth or sponge to liberally apply the solution to all surfaces of the removed parts or soak the removed parts in the sanitizer/water solution. Do not rinse parts after sanitizing.
24. Use 1/2 of the sanitizer/water solution to sanitize the dispenser bin, water trough and delivery spout. Use a cloth or sponge to liberally apply the solution. Do not rinse the sanitized areas.
25. Reinstall the removed parts, restore water and power supply and test run the ice machine.

NOTE: Disconnecting and reconnecting the power supply activated a 15 minute time delay. This delay period can not be over ridden. The delay period will start when power is restored and the ice machine starts after the 15 minute delay period expires.

CLEANING THE CONDENSER

> **⚠ Warning**
> Disconnect electric power to the ice machine and the remote condenser at the electric service switch before cleaning the condenser.

Air-Cooled Condenser

A dirty condenser restricts airflow, resulting in excessively high operating temperatures. This reduces ice production and shortens component life. Clean the condenser at least every six months. Follow the steps below.

> **⚠ Caution**
> The condenser fins are sharp. Use care when cleaning them.

1. The washable filter is designed to catch dust, dirt, lint and grease. This helps keep the condenser clean. Clean the filter with a mild soap and water solution.
2. Clean the outside of the condenser with a soft brush or a vacuum with a brush attachment. Clean from top to bottom, not side to side. Be careful not to bend the condenser fins.
3. Shine a flashlight through the condenser to check for dirt between the fins. If dirt remains:
   A. Blow compressed air through the condenser fins from the inside. Be careful not to bend the fan blades.
   B. Use a commercial condenser coil cleaner. Follow the directions and cautions supplied with the cleaner.
4. Carefully wipe off the fan blades and motor with a soft cloth. Do not bend the fan blades. If the fan blades are excessively dirty, wash with warm, soapy water and rinse thoroughly.

> **⚠ Caution**
> If you are cleaning the condenser fan blades with water, cover the fan motor to prevent water damage.

Section 5
Before Calling For Service

Checklist

If a problem arises during operation of your ice machine, follow the checklist below before calling for service. Routine adjustments and maintenance procedures are not covered by the warranty.

Problem	Possible Cause	To Correct
Ice machine does not operate Blue light on dispenser spout is off	No electrical power to the ice machine	Reset the breaker/turn on main power switch/ plug cord into receptacle
	ICE/OFF/CLEAN toggle switch set improperly	Move toggle switch to the ICE position
	Control Board fuse open	Replace the fuse
Blue light on dispenser spout is on	15 minute delay has not expired	Wait 15 minutes for ice machine to start
	High Pressure Control is open	Clean filter and condenser
	Water reservoir is empty. (Water sensing switch must be closed to start the gearmotor)	Open water service valve or clean float valve screen
Gear Motor runs but compressor will not start.	Dirty air filter and/or condenser causes the high pressure cutout and compressor overload to open	Clean air filter and condenser - Disconnect power for minimum 4 hours then energize. If problem persists contact a qualified service company to determine cause.
Ice machine stops and can be restarted by moving the toggle switch to OFF and back to ICE	The SafeGuard feature is stopping the ice machine	Refer to “SafeGuard Feature” in this section
Ice quality is poor	Poor incoming water quality	Contact a qualified service company to test the quality of the incoming water and check filter
	Water filtration is poor	Replace filter
	Incoming water temperature is above 90°F (32.3°C)	Correct water temperature. (Verify check/ mixing valves in other equipment are working properly). Connect the ice machine to a cold water supply
	Water pressure is low	Water pressure must remain between 20 and 80 psig
	Water softener is working improperly (if applicable)	Repair the water softener
Low ice capacity or Ice machine turns Off & On repeatedly	Water float valve screen is dirty	Remove and clean the filter screen
	Incoming water supply is shut-off	Open the water service valve
	Water dump valve is leaking	Clean the dump valve
	Water Pressure is low. The water sensing switch turns off the ice machine repeatedly	Water pressure must remain between 20 and 80 psig
	Incoming water temperature is above 90°F (32.2°C)	Correct water temperature. (verify check/ mixing valves in other equipment is working properly)
	Frequent power interruptions or power surges/ dips	Verify ice machine is on a separate circuit and power is stable
	Water float valve stuck open or leaking	Remove the float valve and clean it
	Objects stacked around ice machine, blocking airflow to condenser	Remove items blocking airflow
	High air temperature around ice machine	Air temperature must not exceed 110°F (43.3°C)
	Inadequate clearance around the ice machine	Provide adequate clearance
	The condenser is dirty	Clean the condenser

Safeguard Feature

In addition to standard safety controls, your Manitowoc ice machine features built-in SafeGuards. The ice machine will stop when conditions arise that would cause major component failure.

GENERAL

The ice machine control board has safety features to protect the ice machine from severe failures. The ice machine will stop when conditions arise that would cause major component failure.

A control board light will flash to indicate which Safeguard has stopped the ice machine.

Safeguards can be viewed by placing the ICE/OFF/CLEAN toggle switch in the OFF position.

After 48 hours a Safeguard is automatically erased.

DETERMINING WHICH SAFEGUARD STOPPED THE ICE MACHINE

Move the ICE/OFF/CLEAN toggle switch to OFF.

If a safeguard has stopped the ice machine, the light which corresponds to the failure will flash.

SAFEGUARD INDICATOR LIGHTS

During a SafeGuard Mode the corresponding light will flash continuously.

Example; the “water ok” light on the control board flashes when the toggle switch is placed in the Off position. This indicates a loss of water in the reservoir or a failure of the water sensing switch.

The SafeGuard will remain in memory for 48 hours after the control is reset with the toggle switch. After 48 hours the SafeGuard will automatically be erased. If power is interrupted during the 48 hours, the timing will resume when power is applied to the ice machine.

Placing the toggle switch in the OFF position:

The corresponding light will flash continuously.

Placing the toggle switch in the ICE position:

The light will de-energize and a start-up sequence will initiate.

During the first 48 hours after the control board was reset, the corresponding light will flash anytime the toggle switch is placed in the OFF position.

SafeGuards

1. No Water - The water sensor switch opens for more than 20 seconds during the freeze cycle.
2. No Ice Production - The damper door (HES1) fails to open and close at least once during the first 8 minutes of compressor run time.

or

The damper door fails to open and close at least once every 90 seconds during the freeze cycle.

RESET PROCEDURE

1. Move the ICE/OFF/CLEAN toggle switch to OFF and then back to ICE.
   A. If a safeguard feature has stopped the ice machine, it will restart after a short delay. Proceed to step 2.
   B. If the ice machine does not restart, refer to “Ice Machine Does Not Operate” in section 5.
2. Allow the ice machine to run to determine if the problem still exists.
   A. If the ice machine continues to run, the condition has corrected itself. Allow the ice machine to continue running.
   B. If the ice machine stops again, the problem still exists.

SafeGuard Modes

NO WATER

During the Freeze cycle if the water sensing switch opens or remains open for more than 20 continuous seconds,

1. The ice machine will de-energize the compressor and gear motor immediately
2. Continuously flash the control board water OK light
3. Initiate a 15 minute Standby Mode

After the 15 minute standby the ice machine will check the status of the water level sensor.

WATER LEVEL SENSOR CLOSED:

The ice machine will initiate a startup sequence.

WATER LEVEL SENSOR OPEN:

The ice machine will wait for the water level sensor to close.

INDICATOR LIGHT

Before 48 hours have elapsed:

After a Standby Mode has been initiated the water level light will flash anytime the toggle switch is placed in the OFF position.

After 48 hours have elapsed:

The SafeGuard will be automatically erased from memory and the water level will not flash.

No Water SafeGuard Checklist

Possible Problem List	Corrective Action List
No water	Restore water supply.
Water float valve screen blocked	Clean screen.
Water float valve improperly adjusted	Adjust valve (see Water level check).
Dump valve leaking	Repair or replace dump valve.
Water sensing switch disconnected or removed	Connect or correctly position sensor

NO ICE PRODUCTION

The damper door (HES1) fails to open and close at least once during the first 8 minutes of compressor run time

or

The damper door fails to open and close at least once every 90 seconds during the freeze cycle

1. The ice machine will de-energize the compressor and gear motor immediately
2. Continuously flash the HES1 control board light
3. Initiate a 60 minute Standby Mode

After the 60 minute standby the ice machine will restart.

ICE PRODUCTION NORMAL:

The ice machine will continue to run.

NO ICE PRODUCTION:

The ice machine will start another 60 minute Standby Mode.

When 5 consecutive 60 minute Standby Modes occur the ice machine shuts off and flashes the HES1 control board light. The ice machine must be reset by cycling the toggle switch from ICE to OFF to ICE.

INDICATOR LIGHT

Before 48 hours have elapsed:

After a Standby Mode has been initiated the HES1 light will flash anytime the toggle switch is placed in the OFF position.

After 48 hours have elapsed:

The SafeGuard will be automatically erased from memory and the HES1 light will not flash.

No Ice Production SafeGuard Checklist

Possible Problem List	Corrective Action List
Ice machine evaporator has mineral buildup	Clean the ice machine
Damper door removed or incorrectly installed	Refer to component identification for correct placement
Disconnected or defective damper door sensor	Refer to component identification and verify sensor at damper door is attached
Ice frozen to auger/evaporator	Allow evaporator to thaw 1 hour, then retry.
Low voltage	Voltage must be within ± 10% of nameplate voltage.
Gear motor doesn't run, compressor will not run, compressor runs without producing ice	Contact a qualified service company

EC DECLARATION OF CONFORMITY

We hereby declare that our products, ice machines and Multiplex refrigeration equipment comply with all the essential requirements of the listed EC - directives.

Manufacturer:

Manitowoc Ice, Inc.
2110 S. 26th Street, P.O. Box 1720
Manitowoc, Wisconsin 54221-1720 USA

European Distributor:

Representative of Manitowoc Ice, Inc.:

Engineering Manager, (Printed name)

Signature

Representative of European Distributor:

Model and Serial No.

Applied EC Directives:

Low Voltage 73/23/EEC
EMC 89/336/EEC
Pressure Equipment 97/23/EC

Applied Standards:

EN60335-1	Safety of household and similar electrical appliances
EN60335-2-24	Particular requirements refrigerators, food freezers and ice makers
EN55014	Electrical Major Operated Appliances (Emissions)
EN55104	Electro Magnetic Compatability (Immunity)
EN378 -1 to -4	Refrigeration Plants

CE

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08/25/03

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Continuing product improvements may necessitate change of specifications without notice.

Part Number 000005544 12/09

Manitowoc Foodservice
2110 South 26th Street, P.O. Box 1720
Manitowoc, WI 54221-1720, USA
Ph: 920-682-0161 Fax: 920-683-7589
Visit us online at: *www.manitowoc.com*